Medtronic
Engineering the extraordinary

5 ways artificial intelligence is transforming healthcare

How artificial intelligence solutions are empowering health system leaders to deliver results

Digital technology is driving rapid, fundamental changes to almost every aspect of daily life — including the delivery of healthcare. Today, patients expect healthcare to be convenient, accessible, and delivered seamlessly, much in the same way they might order an item from Amazon. Meanwhile, health system leaders are under tremendous pressure to find cost-effective solutions aimed at improving patient outcomes and operational efficiency. While balancing these demands is challenging, advancements in artificial intelligence (AI) can help make healthcare work better for everyone.

Artificial intelligence is a powerful tool that can increase the speed, efficiency, and effectiveness of global health systems. By analyzing large amounts of data in real time, AI can help improve clinical

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and nonclinical decision making; reduce medical variability; and optimize staffing. Likewise, AI can reduce the volume of tedious administrative tasks that often lead to burnout among healthcare professionals.

At Medtronic, we're driven to create healthcare technologies that are worthy of the human body. That's why we've adopted a people-centered approach to the research, development, and responsible deployment of AI. When AI solutions are seamlessly integrated into health system workflows, clinicians have the power to focus on what matters most: patients.

Here are five ways our AI-enabled solutions are accelerating the digital transformation of healthcare technology:

1. Improves accuracy

With staff stretched thin by the pandemic, reducing clinician burden is vital. Artificial intelligence can help improve the accuracy of information that clinicians receive so they can better prioritize their time, empowering them to focus on patient care. Data from two studies presented at the Heart Rhythm Society in 2021 showed that AccuRhythm™ AI algorithms improved the accuracy of alerts generated by our LINQ II™ insertable cardiac monitors (ICM) by addressing the two most common ICM false alerts – atrial fibrillation (AF), an irregular or rapid rhythm in the upper chambers of the heart; and asystole, a long pause between heartbeats:

- The AF algorithm reduced LINQ II™ ICM false AF alerts by 74.1% and preserved 99.3% of true AF alerts.[1]

AI in the healthcare industry

72%

of healthcare executives trust AI to support nonclinical, administrative processes to allow clinicians more time for patient care

Source: Optum

Top 3 potential improvements in patient outcomes due to AI

Virtual patient care (41%)

Diagnosis and predicting outcomes (40%)

Medical image interpretation (36%)

- The Pause algorithm [reduced LINQ II™ ICM false pause alerts by 97.4% and preserved 100% of true pause alerts.][2]

By differentiating between false and true alerts, this AI algorithm can help clinicians focus on the right patients at the right time in the right way.

The AccuRhythm AI ECG classification system may incorrectly adjudicate a true positive episode as an AI false episode, causing that episode to be suppressed in the remote monitoring system. For more safety information, please [go here.]

"The AccuRhythm AI capabilities further elevate the accuracy of LINQ II insertable cardiac monitor and provide clinicians with greater confidence in patient care decisions," said Julie Brewer, President of the Cardiovascular Diagnostics and Services business, which is part of the Cardiovascular Portfolio at Medtronic. "Suppressing false positives while preserving true positives help clinicians spend their time reviewing only the episodes that are clinically relevant."

2. Promotes interventional insights

One of the most promising applications of artificial intelligence in healthcare is

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Julie Brewer
President, Cardiovascular Diagnostics and Services at Medtronic

its integration in diagnostic imaging analysis. By using AI to analyze images gathered during a scan, physicians can identify conditions more quickly, promoting early intervention. We incorporate AI and image analysis in the [GI Genius™ intelligent endoscopy module,] the first computer-aided detection system to use AI to identify pre-cancerous and cancerous colorectal polyps during a colonoscopy. The system works by scanning every visual frame of the procedure in real time and alerting physicians to the presence of lesions — including small, flat polyps that can easily go undetected by the human eye. By detecting and removing these polyps, clinicians reduce the odds of patients developing colorectal cancer.

The first trial of GI Genius™ in the United States demonstrated how the technology is having a profound impact on physicians' ability to find precancerous polyps during a colonoscopy. The study, published in *Gastroenterology,* the official medical journal of the American Gastroenterologists Association, showed that GI Genius reduced missed colorectal polyps by 50% when compared to a standard colonoscopy.[3] It's AI that empowers physicians to optimally care for patients.

GI Genius is not for use as a stand-along diagnostic device and is not intended to replace clinical decision making. For safety information, please go here.

3. Supports training and education

Advances in technology are driving constant changes in the delivery of healthcare. Care providers must seek new training and education opportunities to adjust to this quickly evolving landscape. Artificial intelligence supports these efforts by revolutionizing the capture, storage, and analysis of surgical video. Medtronic innovation is behind Touch Surgery™ Enterprise, the first AI-powered surgical video management and analytics platform for the operating room. Studies show that video analysis can improve surgeon performance.[4] And Touch Surgery™ Enterprise makes it easier to connect your operating rooms to the cloud to seamlessly record and upload video and uncover new insights.

4. Prioritizes patient care

Even before the pandemic, the demand for healthcare outstripped capacity within many global health systems. Prioritizing care for the most critically ill patients is one of the keys to delivering equitable,

Surgical video at your fingertips

Healthcare providers never stop learning. The growing demand for surgical video capture and analysis underscores their commitment to continuing education and training. To support that, Medtronic has entered a contract with Vizient, a healthcare performance improvement company serving more than half of U.S. acute care providers, to add Touch Surgery™ Enterprise to its offerings. By simplifying the process to capture and analyze surgical video, Touch Surgery™ Enterprise is giving these surgical teams a powerful new tool to advance patient care while bolstering training and education.

accessible healthcare. Software platforms powered by AI can assist healthcare professionals with decision-making, ensuring that no patient slips through the cracks.

Sometimes lung cancer patients get lost in healthcare systems due to uncoordinated care and missed opportunities for follow-up. As a result, many patients are diagnosed too late. Our [Lung GPS™ Patient Management Platform](#) is a comprehensive imaging and data software system designed to identify lung nodule patients and streamline their care. It uses AI to mine radiology reports in real time to identify incidental lung nodule findings, enabling clinicians to schedule timely treatment.

5. Fosters equity in healthcare

Unfortunately, structural barriers often prevent healthcare systems from getting the right solutions to the right places at the right time. By creating algorithms from data sets that reflect diverse patient populations, AI can help reduce the bias that often infiltrates the healthcare ecosystem and creates these barriers. Medtronic is committed to dismantling disparities in healthcare and creating long-lasting solutions for underserved

communities. Some of our solutions are centered on AI-enabled technology like the GI Genius™ intelligent endoscopy module. Working with Amazon Web Services, we will donate up to 150 units to endoscopy centers in underserved communities in the U.S. to assist with the early detection and diagnosis of colorectal cancer, which disproportionately affects Black adults.[5]

Making healthcare more human with AI

Artificial intelligence has the potential to help solve some of the biggest challenges facing healthcare today, such as managing costs, physician burnout, and health equity. Our AI solutions are designed to give healthcare professionals the time and tools they need to deliver better care to more people around the world. Let the digital transformation begin.

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